

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

AS AC
29. (New) The ink jet recording apparatus as claimed in claim 28, wherein the plug elements are contained in the at least one maintenance cartridge.

Sub P3
30. (New) A maintenance cartridge for a recording apparatus, comprising:
a body mountable to the recording apparatus at a position at which an ink cartridge is to be mounted to the recording apparatus, wherein the recording apparatus comprises a recording head and an ink supply passage providing a fluid connection to the recording head; and
a plug element that seals the ink supply passage that supplies ink to the recording head.

GM C1 WKT
31. (New) The maintenance cartridge as claimed in claim 30, wherein the plug element seals the ink supply passage to prevent liquid from flowing in a direction from the recording head and out of the ink supply passage.

32. (New) The maintenance cartridge as claimed in claim 31, wherein, when the ink cartridge is mounted to the recording apparatus, ink is supplied from the ink cartridge to the recording head via the ink supply passage.

REMARKS

Claims 1-19 have been examined. Claims 1-5, 10-13, and 17-19 have been rejected under 35 U.S.C. § 102(e), and claims 6-9 and 14-16 have been rejected under 35 U.S.C. § 103(a).

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

I. Objection to the specification

The Examiner has objected to the specification because of a minor formality. Applicant submits that the amendments to the specification overcome the objection and do not contain new matter.

II. Rejection under 35 U.S.C. § 102(e) over U.S.P. 6,183,077 B1 to Hmelar et al.

(“Hmelar”)

Claims 1-5, 10-13, and 17-19 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Hmelar.

A. Claim 1

Applicant submits that claim 1 is not anticipated by (and would not have been obvious over) Hmelar. For example, the Examiner contends that the ink container 20 or 212 shown in Fig. 1 or 9 of Hmelar corresponds to the claimed maintenance cartridge, but Applicant respectfully submits that the Examiner is misinterpreting and/or misapplying the teachings of the reference.

However, claim 1 states that the maintenance cartridge has a main body that is mountable at a position to which an ink cartridge is to be mounted. Therefore, the main body of the maintenance cartridge is separate from the ink cartridge. On the other hand, as described in the reference, the container 20 or 212 is an ink cartridge and thus, does not teach the maintenance cartridge. (Column 3, lines 34+; column 11, lines 41+).

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

In addition, the maintenance cartridge comprises a plug element that seals an ink supply needle that supplies ink to an ink jet recording head. The Examiner contends that the compliant sealing portion 174 shown in Fig. 7 of Hmelar corresponds to the claimed plug element, but Applicant respectfully submits that the Examiner is misinterpreting and/or misapplying the teachings of the reference.

For example, as shown in Figs. 2 and 7 of the reference, the lower portion of the ink cartridge 20 includes a boss 99, a spring 100, a ball 102, a septum 104, a crimp cover 106, and an annular projection 108. As best shown in Fig. 2, the crimp cover 106 is crimped around the annular projection 108 to hold the boss 99, spring 100, ball 102, and septum 104 in place. (Column 5, lines 37-39). As further shown in Figs. 2 and 6, a cap 32 is affixed to the ink cartridge 20 and forms the lower surface of the cartridge 20.

As shown in Fig. 7, the sealing portion 174 is disposed beneath the septum 104 and the crimp cover 106. Furthermore, the portion 174 is contained within a fluid inlet 42 of a base plate 146, and the base plate 146 is part of a docking station 132 and is separate from the ink cartridge 20. (Fig. 6; column 9, lines 43-56). Moreover, the upper surface 176 of the portion 174 is “exposed”, and thus, when the cartridge 20 is inserted onto the base plate 146, the crimp cover 106 contacts and presses on the exposed upper surface 176 of the sealing portion 174.

As clearly described in the reference, the portion 174 is contained in the fluid inlet 42 of the docking station 132 and is not contained in the ink cartridge 20. Thus, assuming *arguendo* that the ink cartridge 20 is a maintenance cartridge, the portion 174 does not correspond to a plug element contained in a maintenance cartridge.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

In light of the discussion above, Applicant submits that claim 1 is patentable over Hmelar.

B. Claims 2-5 and 10

Since claims 2-5 and 10 depend upon claim 1, Applicant submits that such claims are patentable at least by virtue of their dependency.

C. Claim 11

Since claim 11 mentions both an ink cartridge and a maintenance cartridge, Applicant submits that claim 11 is patentable over Hmelar for reasons that are similar to the reasons presented above in conjunction with claim 1.

Also, claim 11 comprises a control system, and when the control system detects that the maintenance cartridge is attached to a recording apparatus, the control system executes a substitute print using ink from an ink cartridge mounted to the recording apparatus. On the other hand, Hmelar is completely devoid of any teaching or suggestion of the features above. Accordingly, Applicant submits that claim 11 is patentable over Hmelar.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

D. Claims 12 and 13

Since claims 12 and 13 contain features that are similar to the features discussed above in conjunction with claim 1, Applicant submits that they are patentable for reasons that are similar to why claim 1 is patentable.

E. Claim 17-19

Since claims 17-19 are dependent upon claims 1, 2, 11, 12, or 13, Applicant submits that they are patentable at least by virtue of their dependency.

III. Rejection under 35 U.S.C. § 103(a) over U.S.P. 5,946,419 to Chen et al. (“Chen”), U.S.P. 5,831,646 to Kuronuma et al. (“Kuronuma”), and U.S.P. 6,155,678 to Komplin et al. (“Komplin”)

Claims 6-9 and 14-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Kuronuma and further in view of Komplin.

A. Claims 6-8

As a preliminary matter, claims 6-8 depend upon claim 1 but the Hmelar reference, which is used in the rejection of claim 1, is not used in the rejection of claims 6-8. Furthermore, the Examiner has not indicated how Chen, Kuronuma, and Komplin (alone or in combination)

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

suggest the maintenance cartridge and the plug element recited in claim 1 and thus, has not presented a *prima facie* case of obviousness.

Also, since Chen, Kuronuma, and Komplin (alone or in combination) do not suggest the maintenance cartridge and the plug element recited in base claim 1, Applicant submits that claims 6-8 are patentable at least by virtue of their dependency.

B. Claim 9

Since Chen, Kuronuma, and Komplin (alone or in combination) do not suggest a maintenance cartridge that has an outward form that distinguishes the maintenance cartridge from an ink cartridge, Applicant submits that claim 9 is patentable over the references.

C. Claims 14-16

As a preliminary matter, claims 14-16 depend upon claim 12 or 13 but the Hmelar reference, which is used in the rejection of claims 12 and 13, is not used in the rejection of claims 14-16. Furthermore, the Examiner has not indicated how Chen, Kuronuma, and Komplin (alone or in combination) suggest the maintenance cartridge and the plug element recited in claim 12 or 13 and thus, has not presented a *prima facie* case of obviousness.

Also, since Chen, Kuronuma, and Komplin (alone or in combination) do not suggest the maintenance cartridge and the plug element recited in base claim 12 or 13, Applicant submits that claims 14-16 are patentable at least by virtue of their dependency.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

IV. Newly added claims

Applicant has added new claims 20-32 to obtain more varied protection for the present invention.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification has been amended as follows.

Page 8, second full paragraph

Incidentally, when another ink cartridge is replaced with a new one during the maintenance cartridge is mounted therein, it is preferable that a negative pressure to be applied to the recording head A to thereby fill ink into the recording head A is decreased and/or that the time period, during which the negative pressure is applied to the recording head A is shortened. For this reason, data for enabling such modified operation is preferably stored in the memory device 11.

Page 8, third full paragraph

Moreover, it is preferable to store, in the memory device 11, data for inhibiting an ejecting operation of nozzles connected to a flow passage of the recording head A to which the maintenance cartridge is mounted.

Paragraph bridging pages 8 and 9

Furthermore, when a set of an ink cartridge, a recording head A and a cap member is independent of another set, it is preferable to store, in the memory device 11, data for disabling an ejecting operation of nozzles and an ink filling operation with respect to the recording head A, to which the maintenance cartridge is mounted.

Page 9, first full paragraph

When the maintenance cartridge is replaced with an ordinary ink cartridge in response to this direction for proper use, an amount of ink to be filled into the recording head A is adjusted according to time period during which the maintenance cartridge is attached thereto. That is, in the case that the time period, during which the maintenance cartridge is attached thereto, is short, an amount of air dissolved in ink in the flow passage of the recording head A, to which the maintenance cartridge is attached, is small. However, in the case that the time period, during which the maintenance cartridge is attached thereto, is long, a large amount of air is dissolved in the ink in the flow passage. Thus, new ink contained in the ink cartridge, which is newly attached to the recording head A, is sucked therefrom to the extent that the ink in the flow passage is replaced with the new ink sucked therefrom.

Page 10, second full paragraph

In this embodiment, when the ink supply needle B is inserted, the cylindrical portion 6a of the plug element 4 is expanded gradually depending on the inserted position of the ink supply needle B. Thus, bubbles are prevented from being forced into the recording head A due to a piston-effect of the plug element when an ink cartridge is replaced with the maintenance cartridge.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/896,116

Paragraph bridging pages 10 and 11

Moreover, in the case that a plurality of protruded rib portions 6c are formed on the inner surface of the cylindrical portion 6c in such a manner as to extend in the direction of movement of the ink supply needle B as illustrated in FIG. 7(b), air can be discharged through the gap defined by the ink supply needle B and the protruded rib portions 6c during the process of inserting the ink supply needle B. Thus, air is prevented from being forced into the recording head A. Simultaneously, the ink inlet hole C can be reliably sealed by the taper portion 6b.

IN THE CLAIMS:

Please enter the following amended claims:

9. (Once amended) A maintenance cartridge, comprising:
[having] an outward form by which a detection system of a recording apparatus can identify the maintenance cartridge,
wherein the outward form distinguishes the maintenance cartridge from an ink cartridge.